

*AUGMENTING SIMPLIFIED HABIT REVERSAL  
WITH AN AWARENESS ENHANCEMENT DEVICE:  
PRELIMINARY FINDINGS*

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The chronic hair pulling of a 36-year-old woman with moderate mental retardation was initially treated with a simplified habit-reversal (SHR) procedure that consisted of awareness training, competing response training, and social support. When SHR did not produce large and sustained reductions in hair pulling, an awareness enhancement device was added, and it reduced hair pulling to near-zero levels in two settings. The results are discussed, and directions for future research with this device are provided.

DESCRIPTORS: habit reversal, awareness enhancement device, hair pulling, awareness training, competing response

A number of studies have demonstrated the success of habit reversal in treating hair pulling by typically functioning adults (Friman, Finney, & Christophersen, 1984). However, habit reversal has not been evaluated with individuals with mental retardation who engage in hair pulling. Instead, punishment procedures have most often been utilized (e.g., facial screening, Friman et al., 1984). Because the prevalence of hair pulling for individuals with mental retardation appears to be equivalent to, or possibly higher than, the prevalence in the typical population (Long, Miltenberger, & Rapp, 1998), an examination of habit-reversal procedures for treating hair pulling in individuals with mental retardation is warranted. The purpose of this study was to examine the effectiveness of a simplified habit-reversal treatment for the chronic hair pulling of a woman with mental retardation. After simplified habit reversal failed to produce sustained reductions in hair pulling, treatment was supplemented with an

electronic device that was intended to increase this individual's awareness of hair pulling.

#### METHOD

Maggie, a 36-year-old woman who had been diagnosed with moderate mental retardation, pulled hair exclusively with her left hand, producing approximately 50% scalp depilation. Maggie frequently manipulated the hairs that she pulled. Because preliminary observations revealed that Maggie never touched her head without eventually pulling hair, hair pulling was defined as touching her scalp or wig hair with the fingers of the left hand. Hair manipulation was defined as moving pulled hair between the thumb and fingers (left hand) or gazing at pulled hair.

Data were collected at a sheltered workshop and in an observation room (5 m by 8 m) located in the same building. Videotape assessment was obtained surreptitiously through a one-way mirror in the observation room and was collected by a videocamera situated on a shelf in the workshop. Because of the difficulty in determining the contents of Maggie's left hand while she was in the workshop, hair manipulation was not as-

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For reprints or further information on the awareness enhancement device, contact Raymond G. Miltenberger, Department of Psychology, North Dakota State University, Fargo, North Dakota 58105.

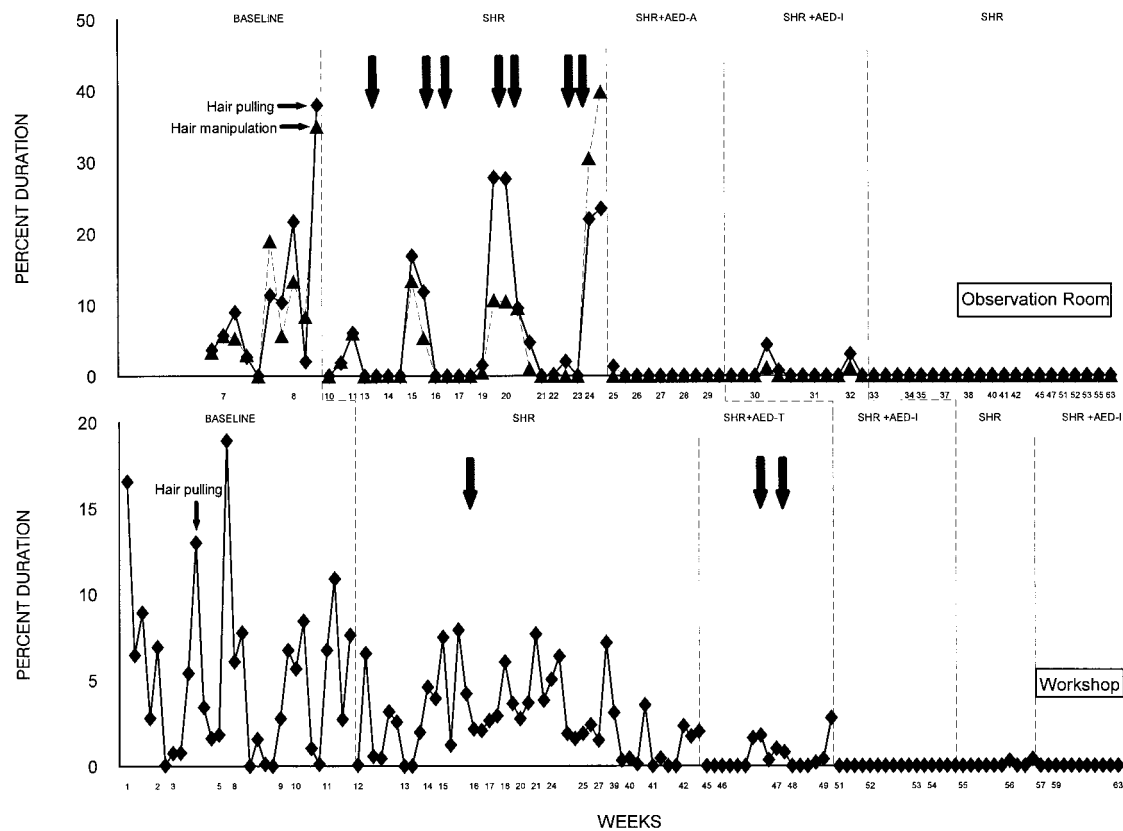


Figure 1. The top panel shows the percentage duration of hair pulling and hair manipulation across phases in the observation room. The bottom panel shows the percentage duration of hair pulling in the workshop. SHR = simplified habit reversal, AED = awareness enhancement device, A = activated, I = inactivated, and T = training. Arrows indicate booster sessions.

sessed in this setting. The occurrence or nonoccurrence of the behavior was scored on a second-by-second basis throughout each observation period to produce a percentage duration measure. Two independent observers scored 33% of the videotape assessment sessions. The mean interobserver agreement score in the observation room was 99.3% (range, 95.3% to 100%) for hair pulling and 98.5% (range, 82.3% to 100%) for hair manipulation. In the workshop, the mean interobserver agreement score for hair pulling was 99.6% (range, 97.7% to 100%).

Treatment was implemented within a multiple baseline design across settings. Treatment initially involved simplified habit

reversal (SHR), which included awareness training, to teach Maggie to detect each occurrence of hair pulling; competing response training, to teach her to engage in an incompatible response (crossing her arms) contingent on hair pulling; and social support, to instruct staff members to provide prompts and praise for her use of the competing response (Rapp, Miltenberger, Long, Elliott, & Lumley, 1998). During training, Maggie always complied with the therapist's prompts to engage in the competing response. Thirty-minute booster sessions (indicated by arrows in Figure 1) were conducted to review awareness training and the use of the competing response. Because of minimal results,

possibly because Maggie could not reliably detect her own hair pulling, the awareness enhancement device was added.

In the simplified habit reversal plus awareness enhancement device (activated) (AED-A) phase, Maggie wore the activated device while she was seated alone in the observation room. The AED was a modified hearing aid with the earpiece worn on the wrist and the receiver attached to the collar of the shirt (the design is patent pending). The AED produced a tone when Maggie's left hand was brought within 6 in. of her head. During the initial treatment session, Maggie was instructed to perform a competing response upon hearing the tone. In the first assessment session, three separate attempts to pull hair caused the tone to sound. Following each attempt, Maggie engaged in the competing response. Thereafter, Maggie did not attempt to pull hair. The simplified habit reversal plus awareness enhancement device (inactivated) (AED-I) phase consisted of Maggie wearing the AED while it was turned off (no tone was produced by hair pulling). For the simplified habit reversal plus awareness enhancement device (training) (AED-T) phase, Maggie wore the activated AED for a 30-min training period in the workshop prior to the arrival of her co-workers. During this training, Maggie was instructed to begin working and was periodically asked to raise her hand to her head. When the tone was emitted, Maggie was instructed to engage in the competing response. The AED was removed when other workers entered the workshop because it emitted a tone in response to ambient noise.

## RESULTS AND DISCUSSION

Following baseline in the observation room, SHR and subsequent booster sessions produced only transient decreases in hair pulling and hair manipulation (see Figure 1). However, the implementation of the AED-

A phase was followed by an immediate decrease in hair pulling and hair manipulation to near-zero levels. A near-zero level of hair pulling was maintained throughout the AED-I phase and in the subsequent withdrawal to SHR phase. In the workshop, SHR produced only a slight decrease in hair pulling. Treatment with the AED-T initially reduced hair pulling; however, pulling began to increase after seven sessions. The implementation of the AED-I phase produced an immediate and sustained reduction of hair pulling.

The present study illustrates the unsuccessful use of SHR for an individual with mental retardation and chronic hair pulling. Although the addition of the AED was followed by an immediate reduction in the target behavior, we can only speculate about what function the AED served in suppressing Maggie's hair pulling. It is possible that the tone produced by the AED became a discriminative stimulus to engage in the competing response (Maggie did so each time the tone was emitted). Alternatively, it is plausible that the onset of the tone positively punished placing the left hand near the head, and termination of the tone negatively reinforced moving the hand away from the head and using the competing response. This punishment explanation is supported by the fact that Maggie did not pull hair when she wore the inactivated device.

A number of limitations of this study should be recognized. First, because of treatment order effects, inferences about the effectiveness of the AED are limited. Second, data concerning the use of prompts by staff for Maggie to engage in the competing response were not collected during the SHR phase. Third, social validation through measurement of hair regrowth was not obtained.

The AED appears to be a particularly promising form of treatment because it produced an immediate reduction in the target behavior and eliminated the need for socially

mediated consequences. Thus, the AED may be potentially useful for promoting generalization in a number of settings. Research is needed to further establish the effectiveness of the AED, as a treatment adjunct and as a separate treatment modality, with a variety of hand-to-head habits (e.g., thumb sucking, fingernail biting) in numerous populations (e.g., children, individuals with mental retardation). Research is also needed to examine the durability and generalization of treatment effects after the AED is removed. Finally, refinements to the mechanical design of the AED are necessary to further enhance its clinical utility.

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